1.0 BUILDING INSULATION

Insulation made from recovered materials is available for thermal insulating applications. The product is available in several forms including rolls, loose-fill, and spray foam. Insulation also can include a range of recovered materials such as glass, slag, paper fiber, and plastics.

2.0 EPA'S RECOMMENDED CONTENT LEVELS

EPA's recommended Recovered Materials Content Levels for building insulation.

Product	**Material**	**% Of Post Consumer Materials**	**% Of Total Recovered Materials**
Rock Wool	Slag		75
Fiberglass	Glass Cullet		20 - 25
Cellulose Loose Fill & Spray-on	Post Consumer Paper	75	75
Perlite Composite Board	Post consumer Paper	23	23
Plastic Rigid Foam, Polyisocyanurate/Polyurethane			
Rigid Foam			9
Foam-in-Place			5
Glass Fiber Reinforced			6
Phenolic Rigid Foam			5
Plastic, Non-Woven Batt	Recovered and /or Post consumer Plastics		100

The recommended recovered materials content levels are based on the weight (not volume) of materials in the insulating core only.

If the Architect/Engineer determines that use of certain materials meeting the CPG content standards and guidelines would result in inadequate competition, do not meet quality/ performance specifications, are available at an unreasonable price or are not available within a reasonable time frame, the Architect/ Engineer may submit to AF Contracting a written justification and supporting documentation for not procuring designated items containing recovered material using the Recovered Materials Determination Form.

3.0 DEFINITIONS

Post Consumer Materials: A material or finished product that has served its intended use and has been diverted or recovered from waste destined for disposal, having completed its life as a consumer item. Post consumer materials are part of the broader category of recovered material.

Recovered Materials: Waste materials and byproducts that have been recovered or diverted from solid waste, but do not include materials and byproducts generated from, and commonly reused within, an original manufacturing process.

Blanket Insulation: relatively flat and flexible insulation in coherent sheet form, furnished in units of substantial area. Batt insulation is included in this term.

Board Insulation: semi-rigid insulation pre-formed into rectangular units having a degree of suppleness, particularly related to their geometrical dimensions.

Building Insulation: material, primarily designed to resist heat flow, which is installed between the conditioned volume of a building and adjacent unconditioned volumes or the outside. This term includes, but is not limited to, insulation products such as blanket, board, spray-on and loose-fill that are used as ceiling, floor, foundation and wall insulation.

Ceiling Insulation: material, primarily designed to resist heat flow, which is installed between the conditioned area of a building and unconditioned attic as well as common ceiling floor assemblies between separately conditioned units in multi-unit structures. Where the conditioned area of a building extends to the roof, ceiling insulation includes such a material used between the underside and upperside of the roof.

Cellulose Fiber Loose-Fill: basic material of recycled wood-based cellulosic fiber made from selected paper, paperboard stock, or ground wood stock, excluding contaminated materials which may reasonably be expected to be retained in the finished product, with suitable chemicals introduced to provide properties such as flame-resistance, processing and handling characteristics. The basic material may be processed into a form suitable for installation by pneumatic or pouring methods.

Fiberglass Insulation: insulation composed principally of glass fibers, with or without binders.

Foam-in-Place Insulation: rigid cellular foam produced by catalyzed chemical reactions that hardens at the worksite. The term includes spray-applied and injected applications such as spray-in-place foam and pour-in-place.

Glass Fiber Reinforced Polyisocyanurate/Polyurethane Foam: cellular polyisocyanurate or cellular polyurethane insulation made with glass fibers within the foam core.

Mineral fiber Insulation: insulation (rock wool or fiberglass) composed principally of fibers manufactured from rock, slag or glass, with or without binders.

Perlite Composite Board: insulation board composed of expanded perlite and fibers formed into rigid, flat, rectangular units with suitable sizing material incorporated in the product. It may have on one or both surfaces a facing or coating to prevent excessive hot bitumen strike-in during roofing installation.

Phenolic Insulation: insulation made with phenolic plastics which are plastics based on resins made by the condensation of phenols, such as phenol or cresol, with aldehydes.

Plastic Rigid Foam: cellular polyurethane insulation, cellular polyisocyanurate insulation, glass fiber reinforced polyisocyanurate/polyurethane foam insulation, cellular polystyrene insulation, phenolic foam insulation, spray-in-place foam and foam-in-place insulation.

Rock Wool Insulation: insulation composed principally from fibers manufactured from slag or natural rock, with or without binders.

Spray-in-place Insulation: insulation material sprayed onto a surface or into cavities and includes cellulose fiber spray-on as well as plastic rigid foam products.

4.0 SPECIFICATIONS

NASA Division 07 – Thermal and Moisture Protection – section 07210 Building Insulation.

NASA Division 07 – Thermal and Moisture Protection – section 07220 Roof and Deck Insulation.

NASA Division 07 – Thermal and Moisture Protection – section 07400 Roofing and Siding Panels.

Note: In 1993, the American Society for Testing and Materials (ASTM) issued a standard for the composition of cullet used in the manufacture of fiberglass insulation, D 5359, "Glass Cullet Recovered from Waste for Use in Manufacture of Glass Fiber." EPA recommends that procuring agencies reference this specification in Invitations for Bid and Requests for Proposals.

5.0 PRODUCTS

5.1 Rock/Mineral Wool

Rock/Mineral wool insulation is made from either molten slag, a waste product of steel production, or natural rock, such as basalt and diabase. Rock/Mineral can be be blown-in as loose fill, used in batts, spray applied with a binding adhesive, or formed into rigid board stock. Rock/Mineral has a higher density than fiberglass, so it has better sound blocking properties.

American Sprayed Fibers, Inc

American Sprayed Fibers, Inc. is a manufacturer of blended fiber products. Their fiber products are 100% recycled material, conforming to the EPA's requirement for total recovered material content.

Research and testing have resulted in the development of high quality fireproofing, acoustical and thermal insulation products for commercial construction, marine and offshore industries.

American Sprayed Fibers, Inc.
1550 East 91st Drive
Merrillville, In. 46410
Tel: (800) 824-2997, (219) 769-0180
Fax: (219) 736-6126
E-mail: mail@asfiusa.com
http://www.asfiusa.com/index.htm

For more information on American Sprayed Fibers, Inc products see Building Insulation Appendix.

Roxul,Inc

ROXUL® products are mineral wool fiber insulations made from combination of 50% natural basalt rock and 50% recycled slag, meeting the EPA requirement for total recovered content.

This combination results in a non-combustible product with a melting point of approximately 2150°F (1177°C), which gives it excellent fire resistance properties. ROXUL mineral wool is a water repellent yet vapor permeable material.

Roxul's products are fire resistant, water repellent, non-corrosive, and resistant to mold, fungi and bacteria growth.

Roxul, Inc
551 Harrop Drive
Milton, ON L9T 3H3
Canada
Toll Free: 800-265-6878
Tel: 905-878-8474
Fax: 905-878-8077
www.roxul.com

For more information on Roxul, Inc products see Building Insulation Appendix.

Sloss Industries Corporation

Sloss Industries' Slag Wool is a man made single strand glassy fiber formed by spinning a molten composition of furnace slags and other materials from a coke fired cupola.

Sloss Industries produces a 93% recycled loose fill fiber, meeting the EPA requirement for total recovered content. This is marketed under the name of Sloss Blowing Wool that is designed as a blown insulation product for commercial, residential, and industrial applications.

Sloss Industries Corporation
P.O Box 5327
Birmingham, AL 35207
Tel: 205-808-7916
Fax; 205-808-7885
Sloss Industries

5.2 Fiberglass

Fiberglass insulation is made primarily from silica spun into glass fibers. Fiberglass insulation today has at least 30% recycled glass content, including both post-industrial glass cullet and post consumer bottle glass.

Knauf

Knauf FiberGlass is a U.S. manufacturer of thermal and acoustical fiberglass insulations for residential, commercial, industrial, marine, original equipment manufacturer and metal building applications. Knauf certifies that Knauf Fiberglass complies with the EPA'S requirements and utilizes at least 25% post consumer recovered materials in the manufacturing of fiberglass insulation.

Products:
- Building Insulation: Batts, rolls and blown insulation and specialty products
- Air Handling: Duct board, duct liner, duct wrap, rigid plenum liner

- Industrial/Commercial: Fiber glass pipe insulation, elevated temperature products, insulation board, duct wrap, pipe and tank insulation
- Metal Building: Blanket insulation
- OEM Products: Blanket insulation, equipment liner, insulation board, acoustical insulations, uncured blanket

Knauf
One Knauf Drive
Shelbyville
Indiana, 46176
Tel: 317-398-4434
Toll Free 800-825-4434
Fax: 317-398-3675
http://www.knauffiberglass.com

For more information on Knauf fiberglass products see Building Insulation Appendix

Owens Corning

Owens Corning delivers commercial and industrial insulating systems that satisfy the thermal and acoustical requirements of the commercial/industrial building industry throughout the world

Owens Corning Pink Fiberglass insulation products are certified by Scientific Certification Systems to contain 30% recycled glass (4% post consumer and 26% post industrial) meeting the EPA requirement for total recovered content.

A wide range of insulating products are manufactured by Owens Corning:
- Roof Decking/Ceiling/Underdeck insulating systems
- Wall insulating systems
- Air Handling insulating systems
- Pipe and equipment insulating systems

Owens Corning World Headquarters
One Owens Corning Parkway
Toledo, OH 43659
Tel: 419 248 8000
Toll Free: 1800-438-7465
Website: www.owenscorning.com

For more information on Owens Corning fiberglass products see Building Insulation Appendix.

Johns Manville

Johns Manville is a manufacturer and marketer of premium-quality building materials, commercial/ industrial roofing, reinforcements, filtration media, and other specialty products.

Johns Manville fiberglass building insulation is certified by the Scientific Certificate Systems organization. The building insulation product line contains at a minimum 25% recycled glass; 18 percent post consumer, re-melted bottles and 7% pre-consumer glass meeting the EPA requirement for total recovered content.

Johns Manville Headquarters
P. O. Box 5108
Denver, Colorado 80217-5108
Tel: 303-978-2000
Johns Manville Home Page

For more information on Johns Manville fiberglass products see Building Insulation Appendix.

5.3 Cellulose Loose Fill & Spray-on

Cellulose insulations contains 75-80% post consumer recycled newspaper and a non- toxic borate and /or ammonium sulfate fire retardant.

Applegate Cellulose Insulation

Applegate insulation contains more than 85% recycled, natural cellulose fiber. This exceeds the EPA's requirement of 75% of post consumer materials. A proprietary two-stage process injects dry and liquid fire retardants that penetrate and strengthen the fibers while providing permanent flame resistance. Cellulose insulation is manufactured in fairly small plants, which pass recycled newsprint through a series of fiberizers.

Applegate Insulation Manufacturing

1000 Highview Drive
Webberville, MI 48892
Tel: 800.627.7536
Fax: 517.521.3597
E-Mai Customer Support: terry@applegateinsulation.com
Applegate Insulation

For more information on Applegate cellulose insulation products see Building Insulation Appendix.

Cell-Pak,Inc

Cell-Pak's Cellulose insulation is made from recycled wood fiber, primarily newspaper. One hundred pounds of cellulose insulation contains 80 to 85% of recycled newsprint. This exceeds the EPA's requirement.

CELL-PAK, Inc
P.O. Box 1023
Decatur, AL 35602
Phone (256) 350-3311
1-800-325-5320
Fax (256) 301-9521
cellpak@hiwaay.net
Cell Pak Cellulose Insulation

Hamilton Manufacturing, Inc

Hamilton manufacturing produces Thermolok, a 100% Boron Cellulose Insulation meeting the EPA requirement for total recovered content.
This cellulose insulation is made from recycled newspapers and a fire-retardant that inhibits pests and fungus

Christy Eames, CEO
Hamilton Manufacturing Inc.
901 Russet Street
Twin Falls, Idaho 83301 USA
1- 208-733-9689
FAX 1-208-733-9447
christy@hmi-mfg.com
HMI Worldwide

Green Fiber LLC

The material content of GreenFiber's product consists of 100% recycled newspaper, meeting the EPA's requirement for total recycled material content.

Cocoon® insulation may be used in walls and attics of residential or commercial structures, as well as cathedral or flat ceilings, crawl spaces, basements, and as insulation under floors. There are no slope restrictions with Cocoon stabilized insulation.

GreenFiber
809 West Hill Street Ste A
Charlotte, NC 28208-9924
Tel: 888-592-7684
Fax: 704-379-0685

Email: greenfiber.info@us-gf.com
U.S. GreenFiber

5.4 Perlite Composite Board

Perlite insulation is composed of expanded volcanic glass and wood fibers bonded with asphaltic binders formed into rigid, flat, rectangular units with suitable sizing material incorporated in the product. This forms a rigid board that is light in weight, dimensionally stable and high in compressive strength. It may have on one or both surfaces a facing or coating to prevent excessive hot bitumen strike-in during roofing installation.

At one time, perlite was the most common insulation used in roofing. Although still popular, its low R-value of 2.78 per inch, and tendency to absorb moisture has lessened its popularity.

Perlite is not recommended for use under mechanically attached or fully adhered single-ply membranes. When used under a mechanically attached single-ply, perlite insulation has a tendency to absorb the condensation that typically forms on the bottom side of the single-ply sheet.

Firestone Building Products Company

Firestone ISO 95+ GL Perlite Composite roof insulation consists of a closed-cell polyisocyanurate foam core factory laminated to a black glass reinforced mat facer on one side and ½" (12.7 mm) perlite board on the other.

Firestone Building Products Company
525 Congressional Blvd., Carmel, Indiana 46032
Toll Free Sales: 1-800-428-4442
Toll Free Technical: 1-800-428-4511
Firestone Building Products Home Page

Document EPA530-B-01-001, June 2001 "Construction Products Containing Recovered Materials" does not list manufacturers or suppliers for perlite composite boards. Additionally, this category is not listed within the GreenSpec Directory. No suppliers of perlite with any recycled content were found during the compilation of this document.

5.5 Plastic Rigid Foam Polyisocyanurate/Polyurethane Foam-in Place Insulation

Foam insulation products, rigid or foam-in-place are all petroleum derived, having better air-sealing, moisture resistance, and insulating properties compared to fiberglass insulation materials.

After consulting the GreenSpec Directory Atlas Roofing Corporation is the only company listed that stipulates a recycled content within its product.

Many Manufacturers are listed within the GreenSpec that produce their Expanded Polysytrene foam without the use of Chlorofluorocarbons (CFCs) or Hydrochloroflurocarbons (HCFCs) thus minimizing the green house effect by utilizing other blowing agents such as carbon dioxide and pentane. These products do not contain any recycled material.

Atlas Roofing Corporation

Atlas Roofing Corporation produces ACFoam®-II roof insulation. The glass-reinforced facers are composed of 100% recycled materials, and the foam itself contains at least 9% recovered materials, together representing approximately 25% by weight of the insulation product meeting the EPA requirement for total recovered content. The exact percentage varies with the product thickness.

Atlas Roofing Corporation
1775 The Exchange
Suite 160
Atlanta, GA 30339
Tel: 770-952-1442
Fax: 770-952-3170
Atlas Roofing

5.6 Glass Fiber Reinforced, Phenolic Rigid Foam and Plastic, Non-Woven Batt

Note: EPA lists recommendations for Glass Fiber Reinforced, Phenolic Rigid Foam and Plastic, Non-Woven Batt categories of building insulation. However, there are no companies listed in the EPA530-B-01-001, June 2001 “Construction Products Containing Recovered Materials” or categories for these products within the GreenSpec Directory. No suppliers for the above products with any recycled content were found during the compilation of this document.

6.0 RECOMMENDATION

It is recommend using one of these companies when circumstances dictate only if it is determined that the percentage of recovered material meets or exceeds the EPA’s requirement. See affirmative procurement requirements.

For additional information see Building Insulation appendix.